

## CLAIMS

What is claimed is:

- 5           1.       A method for processing image data comprising:  
          identifying a first group of pixels exhibiting a first characteristic;  
          identifying a second group of pixels exhibiting a second characteristic;  
          identifying a third group of pixels exhibiting the first and second characteristics;  
          processing the first group of pixels in accordance with at least a first operation;  
10           processing the second group of pixels in accordance with at least a second  
          operation;  
          processing the third group of pixels in accordance with the at least first and  
          second operations; and  
          blending values resulting from processing of the third group of pixels by the first  
15           process with values resulting from processing of the third group of pixels by the second  
          process.
- 20           2.       The method of claim 1, comprising combining the blended values with  
          values of pixels from the first and second groups resulting from their respective  
          processing.
- 25           3.       The method of claim 1, wherein the first group of pixels represent  
          structural pixels and the second group of pixels represent non-structural pixels.
- 30           4.       The method of claim 1, comprising establishing first and second  
          thresholds, and wherein the first group of pixels are identified as having values falling  
          below the first threshold, the second group of pixels are identified as having values  
          falling above the second threshold, and the third group of pixels are identified as having  
          values between the first and second thresholds.
5.       The method of claim 4, wherein the thresholds are gradient thresholds.

6. The method of claim 4, wherein the blending is performed based upon relative proximity of each pixel value to the first and the second threshold.

5 7. The method of claim 6, wherein the blending is based on a linear function.

8. The method of claim 1, wherein the blending is based on a non-linear function.

10 9. The method of claim 1, wherein the operations are selected from a group consisting of enhancement, sharpening, smoothing, deconvolution, extrapolation, interpolation, compression, digital half-toning, and contrast matching.

15 10. The method of claim 1, wherein the third group of pixels are processed in accordance with the first operation along with the first group of pixels, and are processed in accordance with the second operation along with the second group of pixels.

20 11. A method for processing image data comprising:  
establishing first and second thresholds;  
identifying a first group of pixels having a values falling below the first  
threshold;  
identifying a second group of pixels having a value falling above the second  
25 threshold;  
identifying a third group of pixels having a value between the first and second  
thresholds;  
processing the first group of pixels in accordance with at least a first operation;  
processing the second group of pixels in accordance with at least a second  
30 operation; and

processing the third group of pixels in accordance with the at least first and second operations.

5           12.     The method of claim 11, comprising blending values resulting from processing of the third group of pixels by the first process with values resulting from processing of the third group of pixels by the second process.

13.     The method of claim 11, wherein the thresholds are gradient thresholds.

10           14.     The method of claim 11, wherein the blending is performed based upon relative proximity of each pixel value to the first and the second threshold.

15           15.     The method of claim 11, wherein the blending is based on a linear function.

16.     The method of claim 11, wherein the blending is based on a non-linear function.

20           17.     The method of claim 11, wherein the operations are selected from a group consisting of enhancement, sharpening, smoothing, deconvolution, extrapolation, interpolation, compression, digital half-toning, and contrast matching.

25           18.     The method of claim 11, wherein the third group of pixels are processed in accordance with the first operation along with the first group of pixels, and are processed in accordance with the second operation along with the second group of pixels.

30           19.     The method of claim 11, comprising combining the blended values with values of pixels from the first and second groups resulting from their respective processing.

20. A system for processing image data comprising:

a data repository for storing image data;

a processing circuit configured to access image data from the repository, to separate the data representative of pixels into first and second groups and an overlapping group, to process the first and second groups in accordance with first and second operations, respectively, and to process the third group in accordance with both the first and second operations, and to combine the results of the processing to obtain processed image data.

21. The system of claim 20, further comprising an operator workstation for configuring the operations and for viewing images resulting from the processing.

22. The system of claim 20, further comprising an image data acquisition system for generating the image data.

23. The system of claim 22, wherein the image data acquisition system is selected from a group consisting of MRI systems, CT systems, PET systems, ultrasound systems, X-ray systems and photographic systems.

24. A system for processing image data comprising:

means for identifying a first group of pixels exhibiting a first characteristic;

means for identifying a second group of pixels exhibiting a second characteristic;

means for identifying a third group of pixels exhibiting the first and second characteristics;

means for processing the first group of pixels in accordance with at least a first operation;

means for processing the second group of pixels in accordance with at least a second operation;

means for processing the third group of pixels in accordance with the at least first and second operations; and

means for blending values resulting from processing of the third group of pixels by the first process with values resulting from processing of the third group of pixels by the second process.

- 5           25.     A system for processing image data comprising:  
              means for establishing first and second thresholds;  
              means for identifying a first group of pixels having a values falling below the  
first threshold;  
              means for identifying a second group of pixels having a value falling above the  
10           second threshold;  
              means for identifying a third group of pixels having a value between the first and  
second thresholds;  
              means for processing the first group of pixels in accordance with at least a first  
operation;  
15           means for processing the second group of pixels in accordance with at least a  
second operation; and  
              means for processing the third group of pixels in accordance with the at least  
first and second operations.

- 20           26.     A computer program for processing image data comprising:  
              at least one machine readable medium. and  
              machine readable code stored on the at least one medium for carrying out  
routines for identifying a first group of pixels exhibiting a first characteristic,  
identifying a second group of pixels exhibiting a second characteristic, identifying a  
25           third group of pixels exhibiting the first and second characteristics, processing the first  
group of pixels in accordance with at least a first operation, processing the second  
group of pixels in accordance with at least a second operation, processing the third  
group of pixels in accordance with the at least first and second operations, and  
blending values resulting from processing of the third group of pixels by the first  
30           process with values resulting from processing of the third group of pixels by the  
second process.

27. A computer program for processing image data comprising:  
at least one machine readable medium; and

machine readable code stored on the at least one medium for carrying out  
routines for establishing first and second thresholds, identifying a first group of pixels  
5 having a values falling below the first threshold, identifying a second group of pixels  
having a value falling above the second threshold, identifying a third group of pixels  
having a value between the first and second thresholds, processing the first group of  
pixels in accordance with at least a first operation. processing the second group of pixels  
in accordance with at least a second operation, and processing the third group of pixels  
10 in accordance with the at least first and second operations.

28. An image produced by the method of claim 1.

29. An image produced by the method of claim 11.